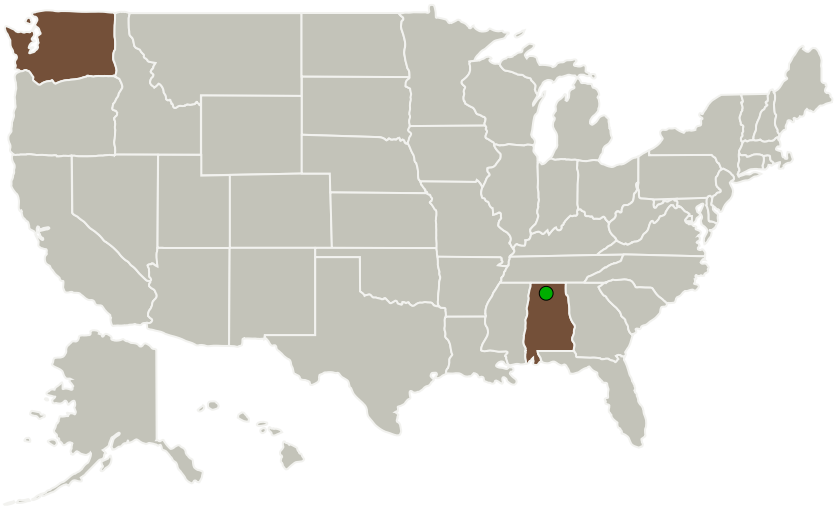
CRISSP - Customizable Recyclable International Space Station Packaging, Phase I

Completed Technology Project (2015 - 2015)

Project Introduction

While additive manufacturing is a game changing technology for in-space repairs and part formation, it still requires a plastic feedstock material to fabricate the printed parts. For longer duration or long distance missions, a large supply of feedstock will need to either be stored on-board, taking up both mass and cargo space, or flown up in expensive resupply missions to enable the continued usage of the 3D printer. TUI proposes to develop Customizable Recyclable International Space Station Packaging (CRISSP), which is a set of materials, formats, and design methodologies optimized both for (1) the economic and mechanical requirements for ISS supplies packaging and (2) being efficiently recyclable onboard the ISS into high performance 3D printer feedstock. A range of packaging formats will be evaluated for use, including common bubble-wrap, foams, folded and thermoformed shells, and parametric cellular additively-manufactured boxes that can be readily optimized for specific payloads and launch environments. The work proposed for this effort will establish a TRL-4+ capability for material re-use over the course of a mission, providing reductions in launch mass and life-cycle cost for missions employing in-situ 3d printing.

Primary U.S. Work Locations and Key Partners



CRISSP - Customizable Recyclable International Space Station Packaging, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Small Business Innovation Research/Small Business Tech Transfer

CRISSP - Customizable Recyclable International Space Station Packaging, Phase I

Completed Technology Project (2015 - 2015)

Organizations Performing Work	Role	Type	Location
Tethers Unlimited Inc	Lead Organization	Industry	
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Washington

Project Transitions

June 2015: Project Start

December 2015: Closed out

Closeout Summary: CRISSP - Customizable Recyclable International Space St ation Packaging, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138780)*

Images

Briefing Chart Image
CRISSP - Customizable Recyclable International Space Station Packaging, Phase I *(https://techport.nasa.gov/image/132018)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Tethers Unlimited Inc

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

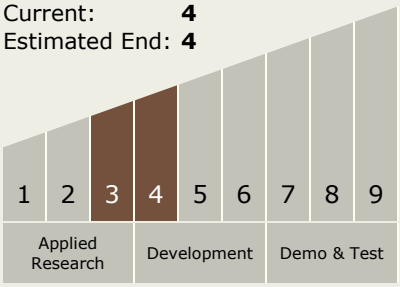
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Rachel Muhlbauer

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



CRISSP - Customizable Recyclable International Space Station Packaging, Phase I

Completed Technology Project (2015 - 2015)

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.1 Logistics Management

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System